1. **(CANCEL)**

2. **(AMENDED)** A controller for a variable air volume terminal, of a variable air volume air conditioning system, comprising:

temperature sensing circuitry for generating a temperature process value;

setpoint determining circuitry for establishing a temperature setpoint;

airflow signal circuitry for generating an airflow setpoint in response to said temperature process value and said temperature setpoint;

flow sensing circuitry for generating a flow process value in response to a predetermined set of flow sensing inputs; and

damper control circuitry for generating a damper motor operation signal to control the damper motor in response to said flow process value and said airflow setpoint, said damper control circuitry comprising a fuzzy logic control mechanism for implementing a set of fuzzy logic rule-based instructions in generating said damper motor operating signal, [The controller of Claim 1,] wherein said temperature sensing circuitry, said setpoint determining circuitry, said airflow signal circuitry, said flow sensing circuitry, and said damper control circuitry are formed sufficiently small for placement on a single printed circuit board, said printed circuit board formed for placement on the damper motor when said damper motor is installed in the damper shaft.

3. (CANCEL)

4. (CANCEL)

5. (CANCEL)

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6. (AMENDED) A controller for a variable air volume terminal, of a variable air volume air conditioning system, comprising:

temperature sensing circuitry for generating a temperature process value;

setpoint determining circuitry for establishing a temperature setpoint;

airflow signal circuitry for generating an airflow setpoint in response to said temperature process value and said temperature setpoint;

flow sensing circuitry for generating a flow process value in response to a predetermined set of flow sensing inputs; and

damper control circuitry for generating a damper motor operation signal to control the damper motor in response to said flow process value and said airflow setpoint, said damper control circuitry comprising a fuzzy logic control mechanism for implementing a set of fuzzy logic rule-based instructions in generating said damper motor operating signal, [The controller of Claim 1,] wherein said controller further comprises circuitry for permitting a fire mode of operation

for said variable air volume terminal.

7 (cancel)

8. (CANCEL)

Cancelled claims on this section 7, 8, 9, 10, 11, 12, 13, 14, 15 See Amdt-A/A.

15. (CANCEL)

16. (AMENDED) A method for controlling a variable air volume terminal, having a damper and a damper motor, comprising the steps of:

generating a temperature process value using temperature sensing circuitry;

establishing a temperature setpoint using setpoint determining circuitry;

generating an airflow setpoint in response to said temperature process value and said temperature setpoint using airflow signal circuitry;

operating said variable air volume terminal in a warm-up mode of operation

generating a flow process value in response to a predetermined set of flow sensing inputs using flow sensing circuitry; ~~[and]~~

generating a damper motor operation signal using damper control circuitry to control the damper motor in response to said flow process value and said airflow setpoint, said damper motor operation signal generating step further comprising the step of implementing a set of fuzzy logic rule-based instructions in generating said damper motor operating signal; and

171 173

[The method of Claim 5, further comprising the step of] forming said temperature sensing circuitry, said **setpoint** **[set point]** determining circuitry, said **[air flow]** **airflow** signal circuitry, said flow sensing circuitry, and said damper control circuitry sufficiently small for their placement on a single printed circuit board, said printed circuit board formed sufficiently small for placement on the damper motor when said damper motor is installed in the damper shaft.

17. **(CANCEL)**

18. **(CANCEL)**

19. **(CANCEL)**

20. **(AMENDED)** **A method for controlling a variable air volume terminal, having a damper and a damper motor, comprising the steps of:**

generating a temperature process value using temperature sensing circuitry;

establishing a temperature setpoint using setpoint determining circuitry;

generating an airflow setpoint in response to said temperature process value and said temperature setpoint using airflow signal circuitry;

operating said variable air volume terminal in a warm-up mode of operation

generating a flow process value in response to a

predetermined set of flow sensing inputs using flow sensing circuitry; ~~[and]~~

generating a damper motor operation signal using damper control circuitry to control the damper motor in response to said flow process value and said airflow setpoint, said damper motor operation signal generating step further comprising the step of implementing a set of fuzzy logic rule-based instructions in generating said damper motor operating signal; and

171 173 **[The method of Claim 15, further comprising the step of]** permitting a fire mode of operation for said variable air volume terminal.

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22. **(CANCEL)** 21 24 26 28 Cancelled. # 9/A.

29. **(CANCEL)** 23 25 27

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30. **(AMENDED)** A variable air volume air conditioning system, comprising:

a variable air volume terminal controller; and

a variable air volume terminal further comprising a damper, a damper motor associated to move said damper, and a terminal controller for controlling operation of said damper motor, said terminal controller comprising:

temperature sensing circuitry for generating a temperature process value;

setpoint determining circuitry for establishing a temperature setpoint;

airflow signal circuitry for generating an airflow setpoint in response to said temperature process value and said temperature setpoint;

flow sensing circuitry for generating a flow process value in response to a predetermined set of flow sensing inputs; and

damper control circuitry for generating a damper motor operation signal to control the damper motor in response to said flow process value and said airflow setpoint, said damper control circuitry comprising a fuzzy logic control mechanism for implementing a set of fuzzy logic rule-based instructions in generating said damper motor operating signal,

171 173 **[The system of Claim 29,]** wherein said temperature sensing circuitry, said setpoint determining circuitry, said airflow signal circuitry, said flow sensing circuitry, and said damper control circuitry are formed sufficiently small for placement on a single printed circuit board, said printed circuit board being formed for placement on the damper motor when said damper motor is installed in the damper shaft.

31. **(CANCEL)**

32. **(CANCEL)**

33. **(CANCEL)**

34. **(AMENDED)** A variable air volume air conditioning system, comprising:

a variable air volume terminal controller; and

a variable air volume terminal further comprising a damper, a damper motor associated to move said damper, and a terminal controller for controlling operation of said damper motor, said terminal controller comprising:

temperature sensing circuitry for generating a temperature process value;

setpoint determining circuitry for establishing a temperature setpoint;

airflow signal circuitry for generating an airflow setpoint in response to said temperature process value and said temperature setpoint;

flow sensing circuitry for generating a flow process value in response to a predetermined set of flow sensing inputs; [and]

damper control circuitry for generating a damper motor operation signal to control the damper motor in response to said flow process value and said airflow setpoint, said damper control circuitry comprising a fuzzy logic control mechanism for implementing a set of fuzzy logic rule-based instructions in generating said damper motor operating signal; and

[The system of Claim 29, wherein said controller further comprises] circuitry for permitting a fire mode of operation for said variable air volume terminal.

36. **(CANCEL)**

35 (Cancel) Paper A19

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43. **(CANCEL)**

44. **(CANCEL)**

45. **(CANCEL)**

46. **(CANCEL)**

47. **(CANCEL)**

48. **(CANCEL)**

CLAIMS 49-69 have been submitted in underlined form in paper #9

49. **(ALLOWED)** A controller for a variable air volume terminal, of a variable air volume air conditioning system, comprising:

temperature sensing circuitry for generating a temperature process value;

setpoint determining circuitry for establishing a temperature setpoint;

airflow signal circuitry for generating an airflow setpoint in response to said temperature process value and said temperature setpoint;

flow sensing circuitry for generating a flow process value in response to a predetermined set of flow sensing inputs; and

damper control circuitry for generating a damper motor operation signal to control the damper motor in response to said flow process value and said airflow setpoint, said damper

control circuitry comprising:

a fuzzy logic control mechanism for implementing a set of fuzzy logic rule-based instructions in generating said damper motor operating signal; and

circuitry for automatically stopping movement of the damper at a control stop position for the damper.

50. **(ALLOWED)** The controller of Claim 49, further comprising circuitry for permitting a warm-up mode of operation for said variable air volume terminal.

51. **(ALLOWED)** The controller of Claim 49, wherein said damper control circuitry further comprises circuitry for automatically calibrating the damper stroke of the damper in the variable air volume terminal.

52. **(ALLOWED)** The controller of Claim 49, wherein said damper control circuitry further comprises circuitry for manually driving the damper of the variable air volume terminal.

53. **(ALLOWED)** The controller of Claim 49, further comprising Hall Effect circuitry for identifying and controlling operation of said temperature sensing circuitry, said setpoint determining circuitry, said airflow signal circuitry, said flow sensing circuitry, and said damper control circuitry upon placing a predetermined magnet device proximate said Hall Effect circuitry.

54. **(ALLOWED)** The controller of Claim 49, wherein said damper control circuitry further comprises circuitry for counting alternating current voltage frequencies to said controller and determining from said alternating current voltage cycles the position of the damper in response to operation of said damper motor.

55. **(ALLOWED)** The controller of Claim 49, further comprising a shield surrounding said flow sensing circuitry for limiting affects of temperature variations on operation of said flow sensing circuitry.

56. **(ALLOWED)** A method for controlling a variable air volume terminal, having a damper and a damper motor, comprising the steps of:

generating a temperature process value using temperature sensing circuitry;

establishing a temperature setpoint using setpoint determining circuitry;

generating an airflow setpoint in response to said temperature process value and said temperature setpoint using airflow signal circuitry;

operating said variable air volume terminal in a warm-up mode of operation

generating a flow process value in response to a predetermined set of flow sensing inputs using flow sensing circuitry; and

generating a damper motor operation signal using damper control circuitry to control the damper motor in response to said flow process value and said airflow setpoint, said damper motor operation signal generating step further comprising the steps of:

implementing a set of fuzzy logic rule-based instructions in generating said damper motor operating signal; and

automatically stopping movement of the damper at a control stop for the damper.

57. **(ALLOWED)** The method of Claim 56, further comprising the step of operating said variable air volume terminal in a warm-up mode of operation.

58. **(ALLOWED)** The method of Claim 56, further comprising the step of automatically calibrating the damper stroke of the damper in the variable air volume terminal.

59. **(ALLOWED)** The method of Claim 56, further comprising the step of manually driving the damper of the variable air volume terminal.

60. **(ALLOWED)** The method of Claim 56, further comprising the step of identifying and controlling operation of said temperature sensing circuitry, said setpoint determining circuitry, said airflow signal circuitry, said flow sensing circuitry, and said damper control circuitry by

placing a predetermined magnet device proximate a Hall Effect circuit of the controller.

61. **(ALLOWED)** The method of Claim 56, further comprising the step of counting alternating current voltage frequencies to the controller and determining from the alternating current voltage cycles the position of the damper in response to operation of the damper motor.

62. **(ALLOWED)** The method of Claim 56, further comprising the step of limiting affects of temperature variations on operation of said flow sensing circuitry using an enclosed shield surrounding the airflow signal circuitry.

63. **(ALLOWED)** A variable air volume air conditioning system, comprising:

a controller for a variable air volume terminal; and

a variable air volume terminal comprising a damper, a damper motor associated to move said damper, and a terminal controller for controlling operation of said damper motor, said terminal controller comprising:

temperature sensing circuitry for generating a temperature process value;

setpoint determining circuitry for establishing a temperature setpoint;

airflow signal circuitry for generating an airflow setpoint in response to said temperature process value and said temperature setpoint;

flow sensing circuitry for generating a flow process value in response to a predetermined set of flow sensing inputs; and

damper control circuitry for generating a damper motor operation signal to control the damper motor in response to said flow process value and said airflow setpoint, said damper control circuitry comprising:

a fuzzy logic control mechanism for implementing a set of fuzzy logic rule-based instructions in generating said damper motor operating signal; and

circuitry for automatically stopping movement of the damper at a control stop position for the damper.

64. **(ALLOWED)** The system of Claim 63, further comprising circuitry for permitting a warm-up mode of operation for said variable air volume terminal.

65. **(ALLOWED)** The system of Claim 63, wherein said damper control circuitry further comprises circuitry for automatically calibrating the damper stroke of the damper in the variable air volume terminal.

66. **(ALLOWED)** The system of Claim 63, wherein said damper control circuitry further comprises circuitry for manually driving the damper of the variable air volume terminal.

67. **(ALLOWED)** The system of Claim 63, further comprising Hall Effect circuitry for identifying and controlling operation of said temperature sensing circuitry, said setpoint determining circuitry, said airflow signal circuitry, said flow sensing circuitry, and said damper control circuitry upon placing a predetermined magnet device in proximity to said Hall Effect circuitry.

68. **(ALLOWED)** The system of Claim 63, wherein said damper control circuitry further comprises circuitry for counting alternating current voltage frequencies to said controller and determining from said alternating current voltage cycles the position of the damper in response to operation of said damper motor.

69. **(ALLOWED)** The system of Claim 63, further comprising a shield surrounding said flow sensing circuitry for limiting affects of temperature variations on operation of said flow sensing circuitry.

70. **(CANCEL)**

71. **(CANCEL)**

72. **(CANCEL)**

73. **(CANCEL)**